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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,164	03/31/2004	Min Zuo	121036-067	8207
35684	7590	08/26/2005	EXAMINER	
BUTZEL LONG 350 SOUTH MAIN STREET SUITE 300 ANN ARBOR, MI 48104			BISSETT, MELANIE D	
			ART UNIT	PAPER NUMBER
			1711	

DATE MAILED: 08/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

N ✓

<b>Office Action Summary</b>	<b>Application No.</b> 10/815,164	<b>Applicant(s)</b> ZUO ET AL.	
	<b>Examiner</b> Melanie D. Bissett	<b>Art Unit</b> 1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/04</u> . | 6) <input type="checkbox"/> Other: ____.  |

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Nippon Mektron, Limited. Nippon Mektron (WO 01/29136) can be found on the applicant's Form PTO-1449. For the purposes of this Office action, the examiner refers to the English language equivalent, Lin et al. (US 6,489,436).

3. Lin teaches a polyimide copolymer made from the applicant's claimed mixture of anhydrides (A) and (B) and diamine (C) (abstract). The claimed molar ratios are used (col. 2 lines 14-21). Polyimides are applied to form films on metallic foils (examples). Flexible circuit boards are noted (col. 5 lines 1-10).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. in view of Nippon Mektron, Limited. Chen et al. (US 5,290,909) can be found on the applicant's Form PTO-1449.

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6. Chen discloses polyimide film compositions applied to metallic foil substrates comprising the reaction product of the applicant's claimed components (B), (C), (D<sub>1</sub>), and (D<sub>2</sub>) (abstract; example 1). Examples show the applicant's claimed ratios of (C) to (D<sub>1</sub>) or (D<sub>2</sub>) (examples 1-2). The examples also teach the claimed method of applying a polyamic acid in a polar solvent, drying the film, and heating the film to form the polyimide. Flexible circuit boards are noted (col. 5 lines 17-25). However, the reference does not teach a mixture of dianhydride monomers. Nippon Mektron teaches copolyimides, where mixtures of dianhydrides are used. Component (A) is used with component (B) to enhance solubility of the resulting polyimide (col. 2 lines 14-21; examples). Thus, it would have been prima facie obvious to combine components (B) and (A) in the applicant's claimed ratios to provide a finished polyimide film with enhanced solubility.

### ***Double Patenting***

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claim 1 is rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 2 of prior U.S. Patent No. 6,489,436. This is a double patenting rejection.

9. Claims 1-6 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2 and 9 of U.S. Patent No. 6,489,436. Although the conflicting claims are not identical, they are not patentably distinct from each other because they contain substantially overlapping subject matter. The patented claims teach copolymer films applied to metallic foil substrates, where the laminates would inherently be capable of use in a flexible printed circuit board. It would have been obvious to use any amounts of the components to obtain suitable laminates, especially given the breadth of the claimed amounts.

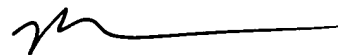
10. Claims 7-17 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2-3 and 9 of U.S. Patent No. 6,489,436 in view of Chen et al. The patented claims teach components (A)-(C). However, they do not teach the use of components (D<sub>1</sub>) and (D<sub>2</sub>). Chen teaches that diamines (D<sub>1</sub>) and (D<sub>2</sub>) are conventionally reacted with (B) and (C) to achieve polyimides of improved flatness and peel strength (col. 4 lines 40-46; examples). Thus, it would have been obvious to include the additional diamines in the copolyimides of the patented invention to form polyimides of improved peel strength and flatness. Also, patented claim 3 teaches dissolving the monomers in polar solvent and cyclizing the formed polyamic acid. However, the reference does not specify the steps of applying

the polyamic acid to the foil, drying the film, and heating the film to cyclize. Chen teaches this process as a conventional polyimide-forming process (examples). It would have been obvious to use this conventional process to form the claimed copolymer laminate to avoid the steps of precipitating the polymer prior to dissolution and application to the substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie D. Bissett whose telephone number is (571) 272-1068. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Melanie D. Bissett  
Patent Examiner  
Art Unit 1711